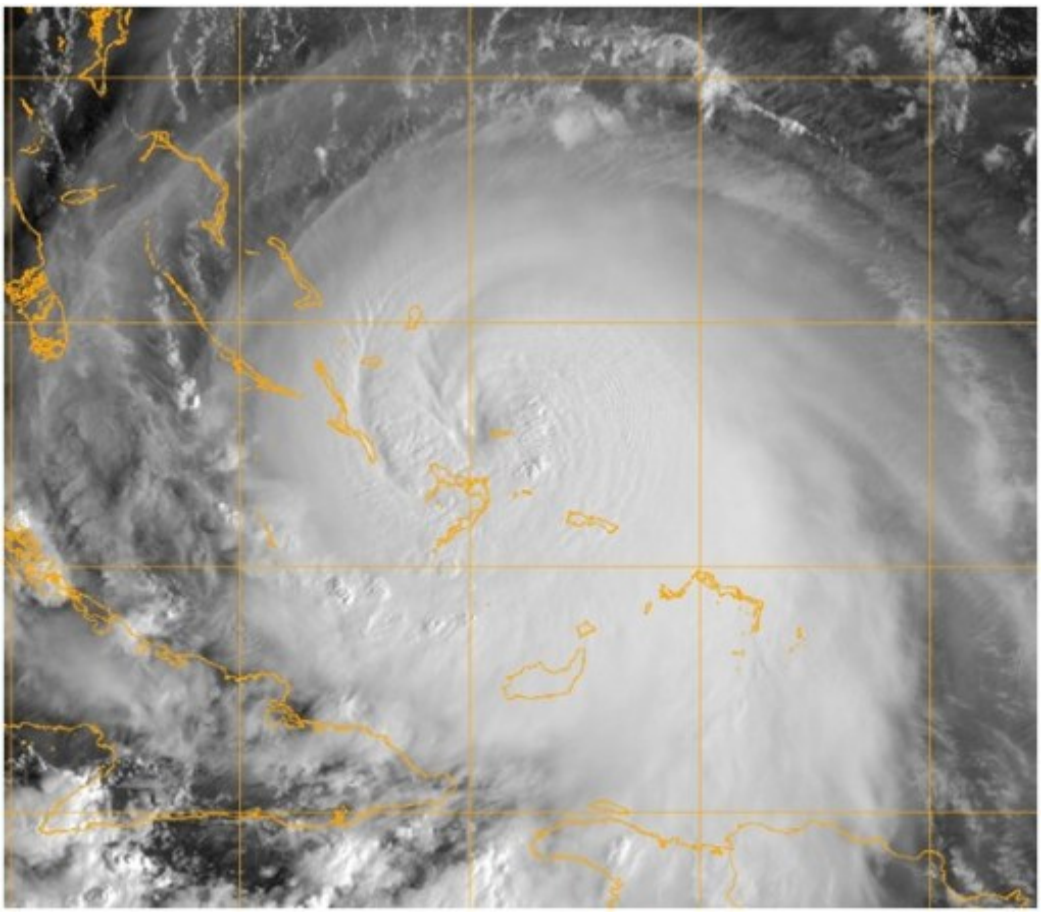
Hurricane Joaquin lashes the Bahamas but will it hit the USA?

Description

In recent months attention has focused on the very active tropical cyclone season in the Pacific Ocean brought about primarily by the strong El Niño which has developed this year. Meanwhile, the Atlantic has been very quiet with most tropical storms remaining fairly weak and only two reaching hurricane strength until now.

However, Joaquin has become the third hurricane of the Atlantic season and the second to achieve ‘major’ status – category 3 or above on the Saffir-Simpson Hurricane Wind Scale. Joaquin is currently lashing the Bahamas with winds in excess of 100 mph near the centre of the hurricane. A storm surge of over two metres is possible and rainfall totals could be as high as 500 mm. Once the hurricane starts moving away from the islands the big question is whether it will make landfall over the US east coast.



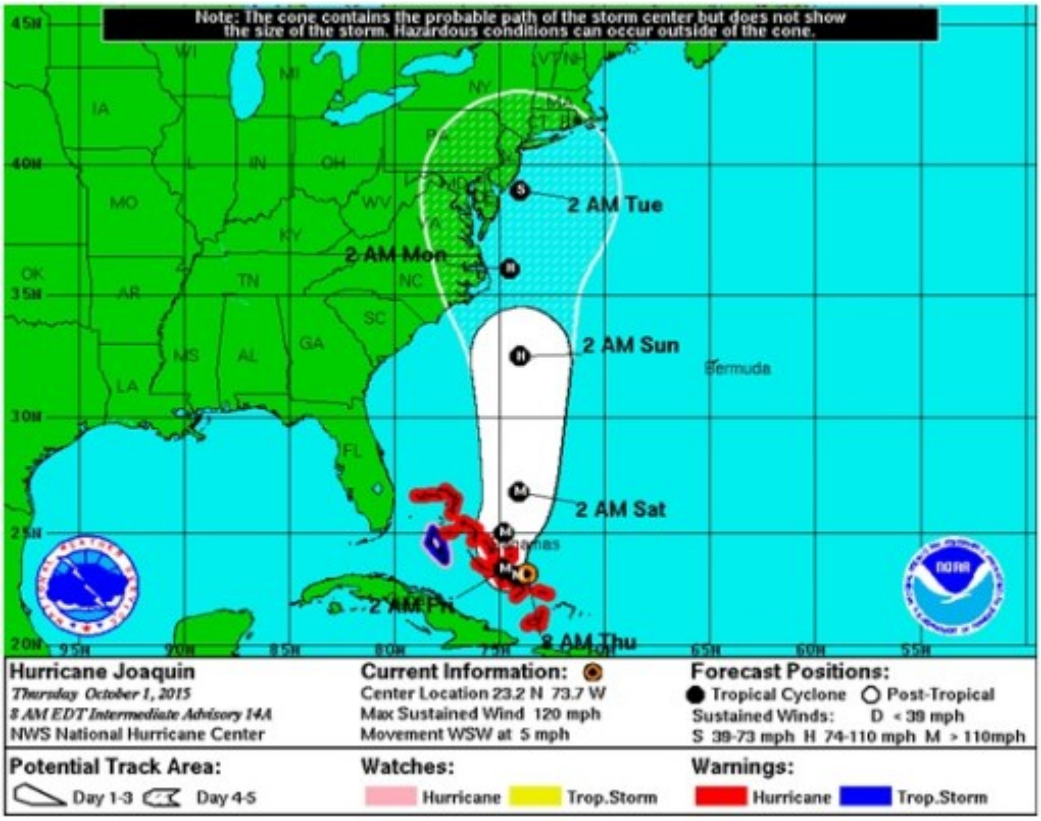
Hurricane Joaquin at 1237 UTC on 01 October 2015
Image courtesy of the US Naval Research Laboratory

The forecasting conundrum

Joaquin is currently slow moving near the Bahamas and all computer models agree that a gradual turn north will happen in about two days time. However, beyond this point there is great uncertainty as to what will happen. Joaquin is being pulled in two directions. A developing trough of low pressure over the USA would act to pull Joaquin westwards towards the US coast. However, an area of low pressure to the east – including the remnants of Tropical Storm Ida – would act to pull Joaquin east away from the USA. The situation is finely balanced and any of several outcomes could happen.

One scenario is that Joaquin could make a turn north-westwards and make landfall near the Outer Banks of North Carolina at the weekend. Computer models are now mostly moving away from this as a likely outcome. Alternatively, Joaquin could take a mostly northwards track and reach New York and New England by early next week then continue up the eastern seaboard of Canada. Finally, a third scenario allows for the possibility that Joaquin could turn north-eastwards and avoid a US landfall altogether. We recommend that a close watch is kept on guidance issued by the National Hurricane Center in coming days for updates on which scenario is the most likely to occur.

Irrespective of whether or where Hurricane Joaquin makes landfall on the US east coast, large amounts of rain are expected in this area in the coming few days due to a slow-moving frontal zone. The impact of this will be exacerbated if Hurricane Joaquin does take a turn towards the USA in the next few days with further heavy rain accompanied by strong winds and a storm surge.



Latest forecast track of Hurricane Joaquin from the National Hurricane Center

Recent history of US landfalling hurricanes

Hurricane strikes on the USA have been fairly infrequent in recent years – particularly those at the stronger end of the scale. In 2014 Arthur crossed the Outer Banks of North Carolina as a category 2 hurricane. Going back to 2012, Isaac came ashore over Louisiana as a minimal category 1 hurricane. In 2011 Irene made landfall on the east coast of the USA also as a category 1 hurricane. The USA avoided hurricane strikes altogether in 2010 and 2009, but in 2008 three made landfall, the most significant of which was Hurricane Ike which caused a huge storm surge as it came ashore over Texas as a category 2 hurricane. However, you have to go back to 2005 to find the last 'major' hurricane strike on the USA (category 3 or above), when Hurricane Wilma hit Florida.

Hurricane Sandy (sometimes referred to as 'Superstorm Sandy') also caused much devastation to parts of the USA east coast in 2012. It is ranked as the second most costly hurricane in US history, although technically ceased to be a hurricane just prior to the time it made landfall.

Official warnings for the latest tropical cyclones in the Atlantic are produced by the US National Hurricane Center. The Met Office routinely supplies predictions of cyclone tracks from its global forecast model to regional meteorological centres worldwide, which are used along with guidance from other models in the production of forecasts and guidance. We also provide updates on current tropical storms via @metofficestorms on Twitter.

Will Joaquin affect the UK?

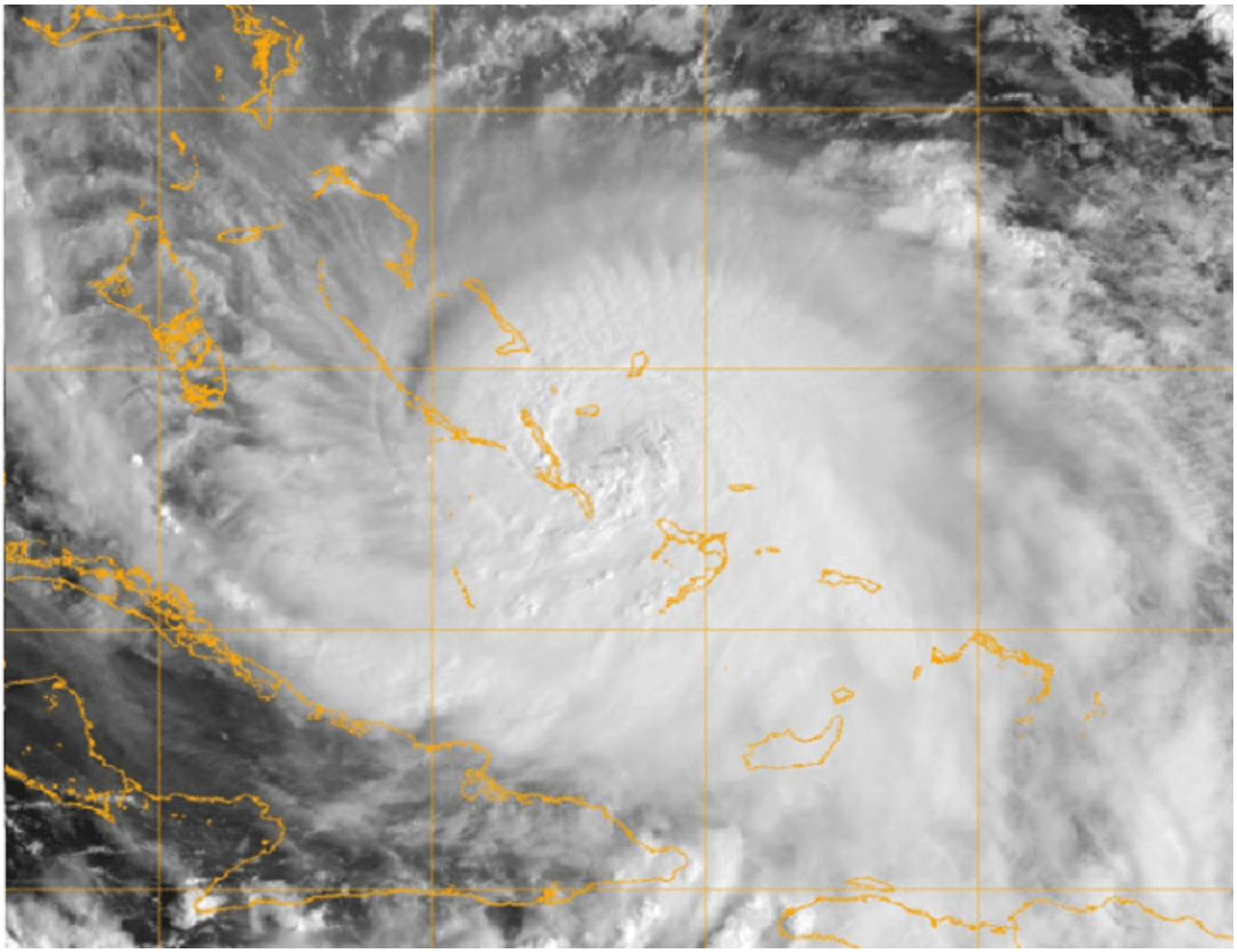
With the confidence around the exact track of Joaquin being so low, it is currently too early to tell if this system will affect the weather in the UK. There is, however, already high confidence that we will return to more autumnal and unsettled conditions across the UK early next week. Make sure you keep up-to-date with the Met Office five-day forecast.

Date Created
October 2015

Hurricane Joaquin update: storm lingers near the Bahamas

Description

Hurricane Joaquin has become slow moving near the Bahamas and yesterday strengthened to category 4 on the Saffir-Simpson Hurricane Wind Scale. It is now the strongest Atlantic hurricane in terms of central pressure since Hurricane Igor in 2010. It has brought flooding rains to many of the islands and winds well in excess of 100 mph. Joaquin is likely to stay close to the Bahamas for another 24 hours or so before starting to move north.



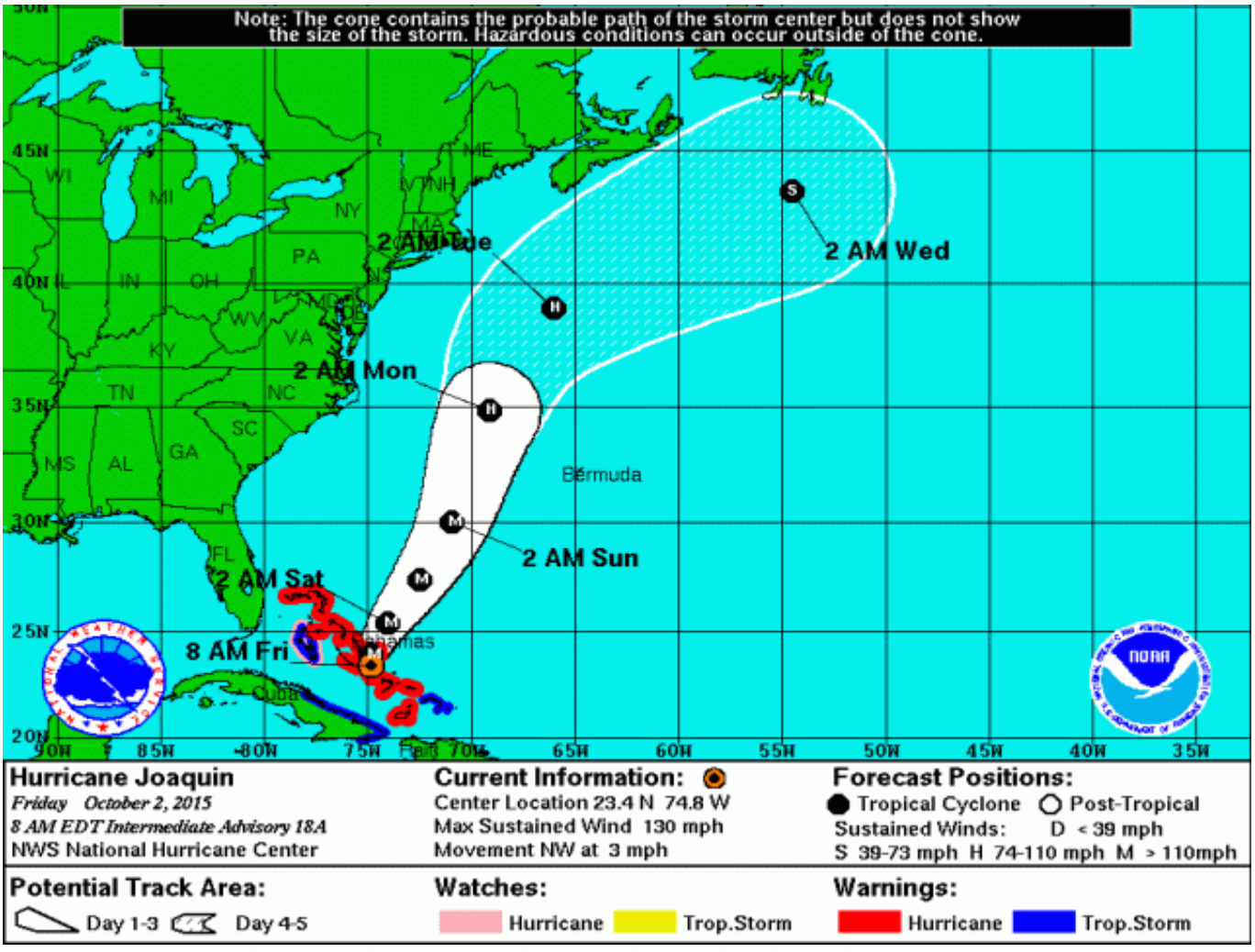
Hurricane Joaquin at 1307 UTC on 02 October 2015 Image courtesy of the US Naval Research Laboratory

Yesterday's blog described three possible scenarios of where Joaquin could go once it starts moving away from the Bahamas. Since then there have been some significant changes in guidance from the various forecast models used to predict both the track and intensity of the hurricane. The likelihood of a turn north-westwards towards the US coast has now significantly diminished. Joaquin is now likely to

move north and then north-eastwards into open waters of the Atlantic. However, there is still some uncertainty as to the extent of the north-eastwards turn and thus how close Joaquin comes to the east coasts of both the USA and Canada. Even if Joaquin stays well offshore, there could be dangerous rip currents along the coast and heavy flooding rains from a separate weather system currently affecting the eastern side of the USA.

If the turn of Joaquin to the north-east is a fairly sharp one then attention will turn to affects on the British Overseas Territory of Bermuda situated in the Atlantic Ocean. In 2014 hurricanes Fay and Gonzalo passed over the island in quick succession and it is possible that Joaquin could do the same. By then Joaquin is likely to be weakening and any impacts will depend on exactly how close to the island the hurricane tracks.

In the longer term there are indications that Joaquin will move to higher latitudes and head eastwards across the Atlantic. However, it is too early to be sure if it will have any impacts on Western Europe including the UK. There is, however, already high confidence that we will return to more autumnal and unsettled conditions across the UK early next week. Make sure you keep up-to-date with the Met Office five-day forecast.



Latest forecast track of Hurricane Joaquin from the National Hurricane Center

Official warnings for the latest tropical cyclones in the Atlantic are produced by the US National Hurricane Center

. The Met Office routinely supplies predictions of cyclone tracks from its global forecast model to regional meteorological centres worldwide, which are used along with guidance from other models in the production of forecasts and guidance. We also provide updates on current tropical storms via @metofficestorms on Twitter.

Date Created
October 2015

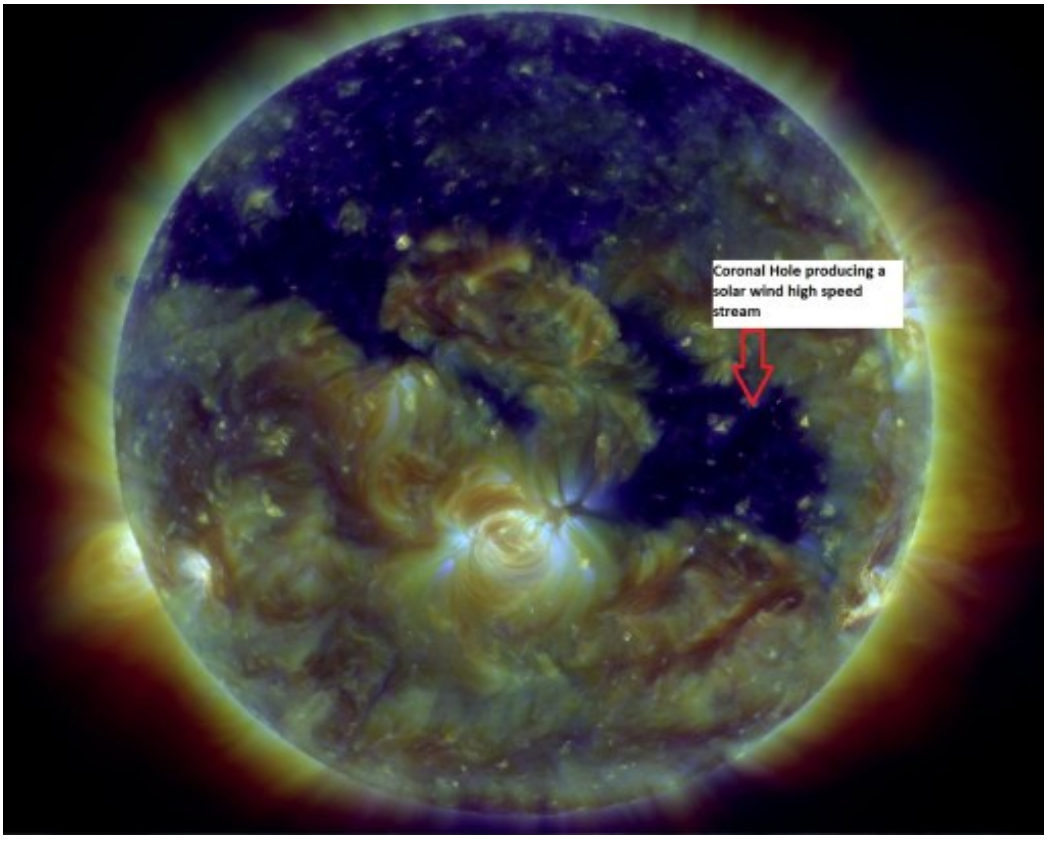
The chances of seeing the aurora borealis in the UK increases

Description

Over the next few weeks the likelihood of seeing the a*urora borealis (Northern Lights)* here on Earth is on the increase as two space weather phenomena coincide.

What are these phenomena?

Firstly, the Sun goes through an 11 year solar cycle, from solar minimum, through solar maximum and back to solar minimum. We are now in the declining phase of the solar cycle following the solar max which occurred in early 2014. During the current phase of the solar cycle coronal holes that begin the cycle in the Sun's 'polar' regions have now migrated towards the Sun's equator, meaning they are on a similar line of latitude to the Earth (i.e. facing the planet rather than directed north and south out of the solar system). These coronal holes give rise to high speed solar wind streams that buffet the Earth, disturbing the Earth's magnetic field.



Coronal hole 7 October 2015. Image courtesy of NASA
http://sdo.gsfc.nasa.gov/data/

In other parts of the solar cycle these disturbances are largely as a result of coronal mass ejections, which can give larger magnitude disturbances than these high speed streams.

Secondly the season of the year has an influence. The science behind this is not fully understood, but the two equinoctial periods in spring and autumn tend to produce an increase in aurora compared with winter and summer.

What does this mean for the UK?

We are now in a period, lasting a few weeks, where these two factors are working together to increase the chances of geomagnetic disturbances, which in turn bring with them the *aurora*. The strength of the disturbance directly relates to how far south the *aurora* is visible (or how far north if you are in the southern hemisphere), and of course you need clear skies to see it.

Keep an eye on our space weather forecasts and if there's a chance of seeing the aurora in the UK we'll let you know.

The Met Office works closely with the British Geological Survey to forecast these geomagnetic events and the BGS website provides 'Tips on viewing the Aurora'.

Date Created
October 2015

Space Weather Centre one year old

Description

The Met Office Space Weather Operations Centre (MOSWOC) has been operating for one year this month.

Space Weather can impact all our lives, in particular the technology which we rely on and it is the study of the Earth's upper atmosphere and magnetic field. MOSWOC gathers critical information needed to help the UK prepare for and build resilience to space weather events.

It's certainly been a busy year! MOSWOC has been relocated and the new setup allows our space weather advisors to monitor the Sun in detail 24 hours a day 365 days a year.

During this time we've been working hard to improve the cutting edge technology we use for our forecasts and we are now using our new Cray supercomputer to help warn of geomagnetic storms.

Talking of which, just this week we were able to forecast and accurately predict that a geomagnetic storm would bring increased chances of seeing the aurora borealis. Last night (7 October 2015) there were many sightings of the Northern Lights, even as far south as south Wales. As we blogged yesterday, there are increased chances of seeing the aurora over the next few weeks.

Here are some examples of the stunning pictures captured by those lucky enough to witness the aurora last night:

> @metoffice @VirtualAstro stunning on Hadrian's Wall earlier this evening ! pic.twitter.com/o9kLUWpIqZ
>
> — Cain Scrimgeour (@cainscrimgeour) October 7, 2015

> Aurora tonight from Stranraer,Scot.@DGWGO @aurorawatchuk @Aurora_Alerts @VirtualAstro @metoffice @BBCScotWeather pic.twitter.com/iKE0rySNM8
>
> — PsyguY (@DoojDj) October 7, 2015

> @metoffice here's my effort https://t.co/Voy6slJbZL pic.twitter.com/V4krk93L1t
>
> — Grande Le Onion (@grandeleonion) October 7, 2015

More people than ever are becoming interested in space weather with the space weather forecast on our website seeing a significant increase in viewings. Why not take a look and find out more? or follow @metofficespace on Twitter.

Our science team, alongside academic partners, has started work on two new projects, which will ultimately feed back into the forecasts. FLARECAST is a study looking at the origins of solar storms and SOL-TERRA is aiming to improve the modelling system used for Sun to Earth space weather forecasting.

The coming year will also see us providing space weather services to the European Space Agency as a partner in the Heliospheric Expert Centre, so a busy second year is certainly forecast as MOSWOC continues to go from strength to strength!

Date Created
October 2015

Do swans herald snow for the UK?

Description

There has been some speculation that the UK may be in for a cold winter after the arrival of a migrating Bewick's swan from Russia.

The swan arrived at the WWT Slimbridge Wetland Centre in Gloucestershire on Sunday 11 October, the earliest date since records began at the site in 1963. It is thought low temperatures, snowfall and north easterly winds in Russia have encouraged Bewick's swans to start their westwards migration through Europe early this year. The swans have also been spotted gathering on lakes in the Netherlands.

First Berwick's swan spotted in Gloucestershire. Credit: MJ McGill

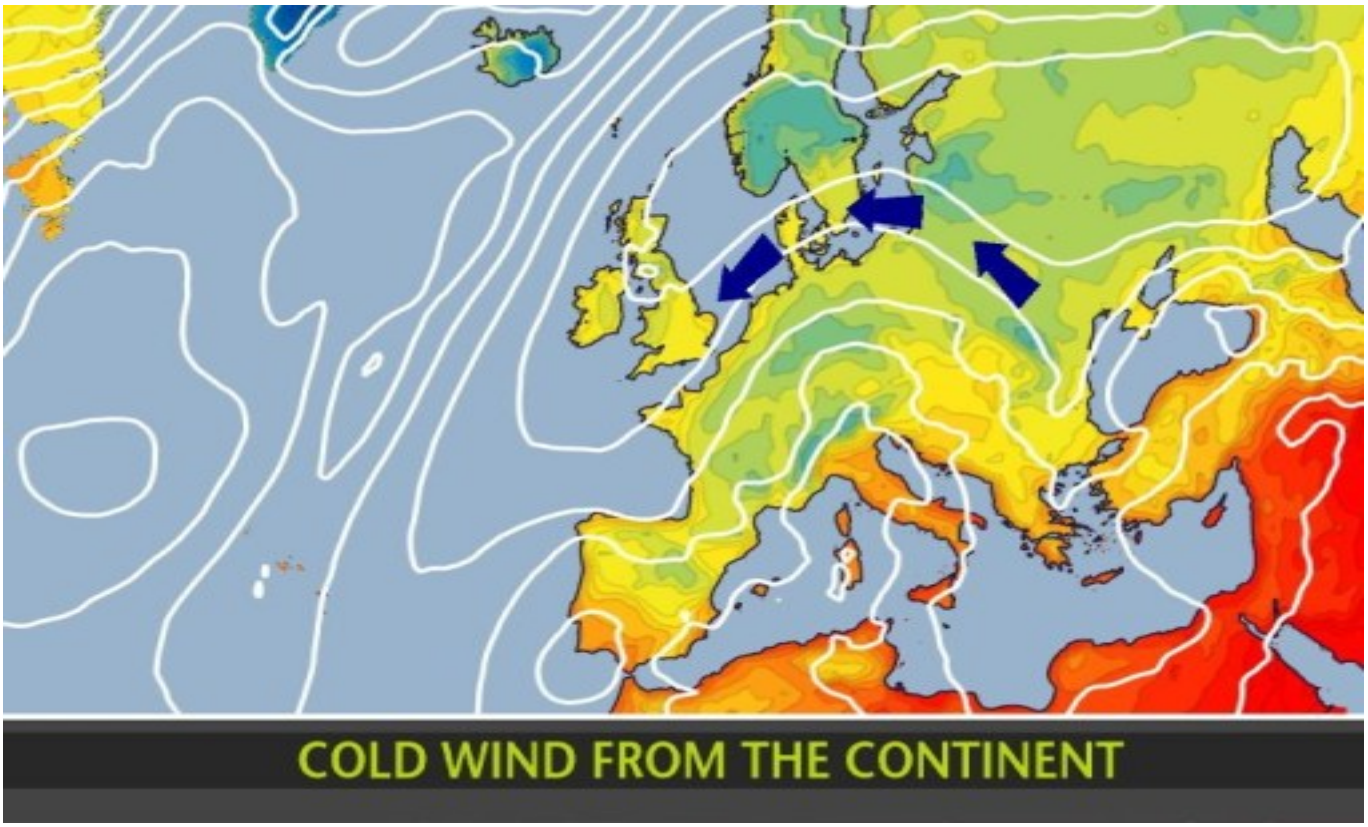
WWT studies have shown that the weather is a major influence on when Bewick's swans migrate from Russia, with the wind direction being a particularly crucial factor.

Unusually cold weather has developed over a large part of continental Europe and is likely to persist through this week with temperatures around 5-10 degrees below average. Daytime temperatures in Russia on Monday were around 3-4C which is more like the average nightime temperature for this time of year. The cold weather is extending further west and south going as far south as the Mediterranean coast of France and north east Spain. Snow has fallen over southern Poland, western Ukraine and eastern Slovakia.

WWT's Julia Newth said:
"Apparently there's a Russian saying 'the swan brings snow on its bill', because they tend to move just ahead of the cold weather. Of course, we can't infer much from the arrival of a single swan but it's certainly exciting this bird has arrived so early.
"It's only a year old and, because it's made it all the way here on its own, we assume that it must have come to Slimbridge last year as a cygnet with its parents. We record all the Bewick's swans that come to Slimbridge each winter by their unique bill pattern as part of our study and give them a name. This one needed a name, so we've called him Record Breaker."

The public can see the Bewick's swans at WWT Slimbridge where they are fed daily from November 1 to the end of February. They can also be seen via the webcam.

Will the cold weather in Europe affect the UK?
High pressure is currently dominating the weather over the UK with winds from the east bringing cold air. Many places will stay dry with bright days and chilly nights with temperatures around, or a little below, average for the time of year. However, there will be some showers, especially along eastern coasts and in the southeast of England over the next few days.



There is no sign of any snow for the UK, but low overnight temperatures will allow some localised frost and fog to form. Take a look at our forecast pages for the latest weather for your area. At this stage it is too early to speculate what weather this winter may bring to the UK.

Date Created
October 2015

How much does the weather influence what we put in our grocery basket?

Description

What do you think determines what we buy when we go food shopping? Whilst the odd item may catch our eye and lead to one of those ‘impulse purchases’, British consumers can in some ways be rather predictable when it comes to what influences their choices.

For example, when Christmas comes around, it isn’t hard to predict that we’re going to be looking for turkey and sprouts. And when the economy is doing well, the chances are we’ll be buying a few more bottles of expensive wine.

But one of the most important factors – in fact one which around half of the decision makers at UK retailers and suppliers would count in their top three – is the weather. And whilst Santa’s sleigh may come to town once a year like clockwork, us Brits – more so than most – know that the weather doesn’t quite work in such a predictable manner.

The weather can have a significant impact on what we choose to buy when in store, and ultimately on retailer performance. For example, a four degree increase in temperature can lead to sales of burgers increasing by nearly half, according to one leading supermarket.

When the weather changes, retailers risk losing millions through low stock levels, empty shelves and disappointed customers. It can lead to unexpected fluctuations in store footfall and sales, shortages in availability, and impact the costs and efficiencies of the whole supply chain – this is particularly true for fresh, chilled and seasonal products.

We wanted to understand a bit more about how the UK grocery sector as a whole accounts for the weather in its planning, so we have developed a new report based on opinions of key executives and managers across over 200 food suppliers and retailers in the UK. The report looks at just how much the weather impacts their business – and how they use weather products to make those all-important

stock predictions. After all, no one likes going to the supermarket to find that their favourite food item is sold out.

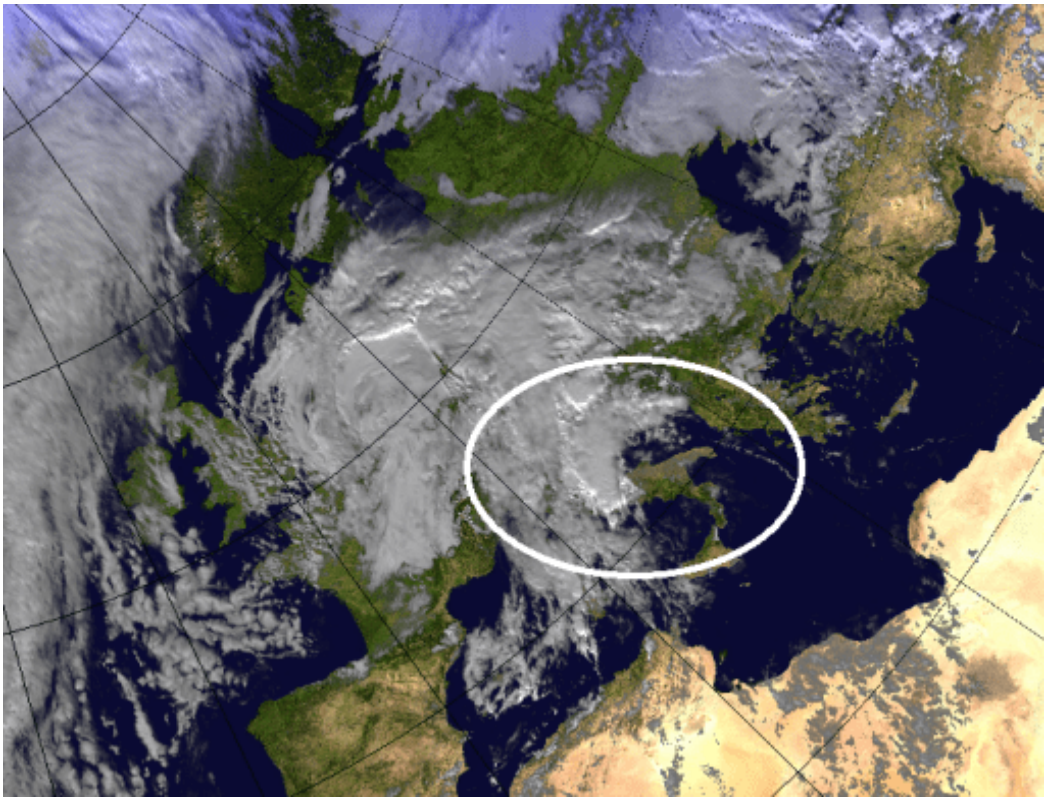
Date Created
October 2015

World weather this week

Description

Over the past week high pressure situated over or near the UK has brought fairly quiet and settled weather across the country and this is expected to continue into next week. Elsewhere across the globe there are some potentially significant weather events evolving which our meteorologists are keeping an eye on. Here we take a look at a few key areas and explore what the forecast has in store over the coming days.

Central and western Mediterranean
Recent thundery outbreaks of rain in the central Mediterranean are likely to continue into next week. Parts of central Italy, Croatia, Montenegro and Albania may see 150-250mm of rain, with as much as 500mm possible in some places over a few days, which is over twice their monthly average rainfall. As a result, significant flooding, with a risk of landslides may affect central Italy and Croatia Wednesday and Thursday, then affecting coastal parts of Montenegro and Albania on Friday.



Visible satellite image at 3pm 14/10/15 showing clouds building over the central Mediterranean. Credit MSG.

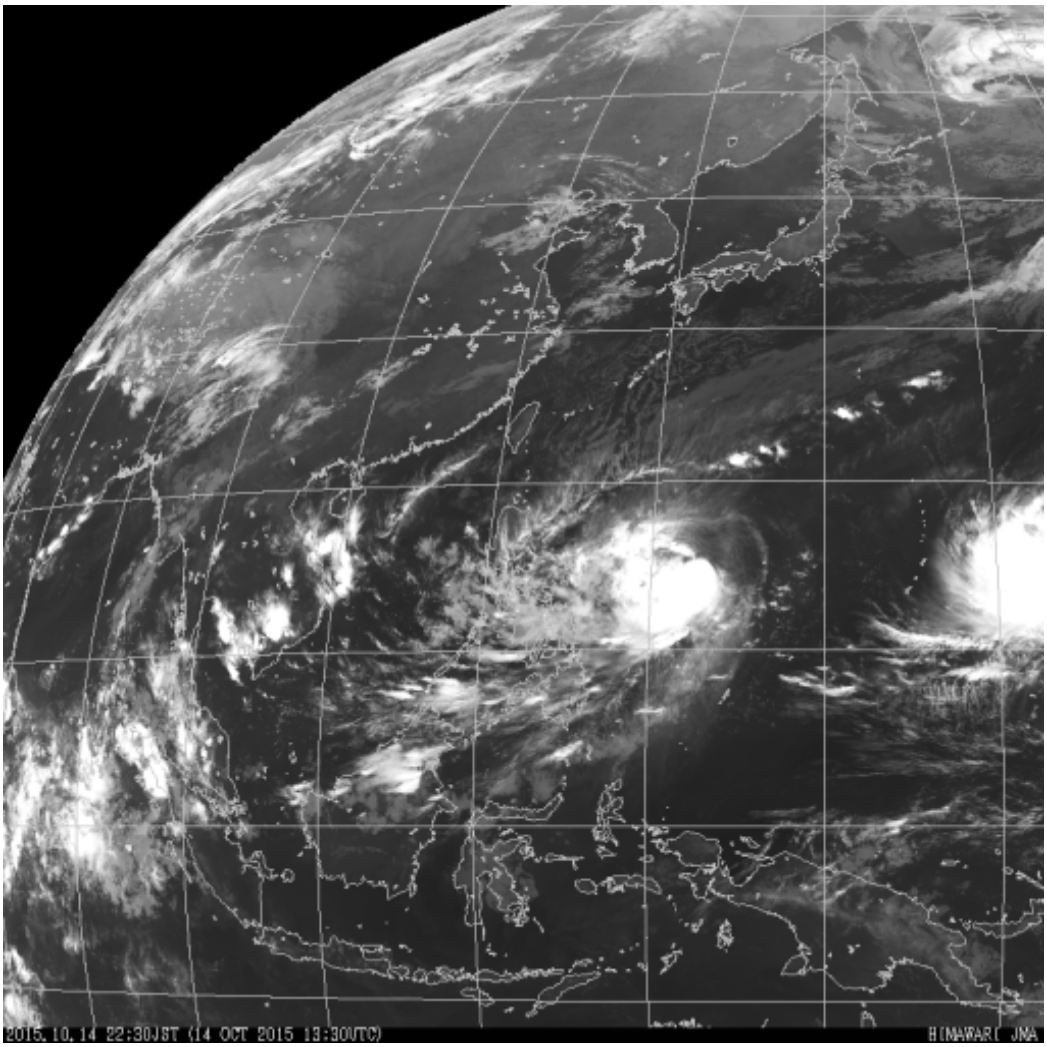
USA
Parts of the Midwest and Northeastern states of the USA are expected to see their first snow showers

of the season this weekend. Cold air is expected to push south across the Great Lakes by Saturday, reaching the northeast by Sunday, meaning that daytime temperatures are likely to be in single figures (Celsius), close to the average night-time temperatures for this time of year. This comes after some states recorded their warmest September on record. Some places may see snow showers, including parts of upstate New York and Pennsylvania. The snow is not expected to cause significant disruption and is likely to fall as sleet rather than snow in most urban areas but it will feel rather chilly!

Very cold air across eastern parts of the USA and across eastern Europe

Philippines

There is also some active weather in the tropics, with Tropical Storm Koppu currently sitting over the western Pacific to the east of the Philippines. This storm puts the Philippines at risk of flooding and wind damage later this weekend as the storm moves westwards and strengthens to probably become a significant Typhoon by the end of the week. Current forecasts take Koppu into the northern part of the Philippines (Luzon) later this weekend, with heavy rainfall, very strong winds, high waves and a storm surge likely to have significant impacts.



Infra red satellite image at 2.30pm 14/10/15 showing Tropical Storm Koppu approaching the Philippines. To the east lies Tropical Storm Champi which is not expected to reach the Philippines. Credit: JMA.

Date Created
October 2015

Heriot-Watt University revives Weather Game

Description

The Interaction Lab, School of Computer Science at Heriot-Watt University have revived the Weather Game – an online game designed to understand how best to present probabilities in weather forecasts by Liz Stephens and the Met Office..

The team at Heriot-Watt are using the game to investigate how the presentation of information affects how people make decisions. The study will focus on investigating how probability information can be best presented to maximise effective decision-making.

The Weather Game
Help us to help you by helping Brad...
We are investigating how the way information is presented affects how people make decisions. In order to do this, we have designed a short game.
During the game you will be asked a series of questions related to weather predictions. You will be giving advice to Brad, an icecream seller, based on the weather forecast for that week. Brad will make more or less money depending on the advice you give him.
Participation is anonymous so you will not be asked to enter any information by which you may be identified. You may stop playing at any point. The data collected will be used for research purposes only. All data will be stored anonymously.
Please note that only over 18's can take part in this experiment.
Click on Start the Game to proceed.
Be in with a chance to win a £50 Amazon voucher every week
amazon
Ice Cream
Use weather forecasts to help Brad run his ice cream van business
Start the game
It takes about 5 minutes

The game sees the return of Brad the ice cream seller who is trying to maximise his profits based on your decisions. During the game, you will be asked a series of questions related to weather predictions with the aim of giving advice to Brad, based on the forecast for that week. Brad will make more or less money depending on the advice you give him.

Participation is anonymous. To find out more check out the new Weather Game website.

Date Created
October 2015

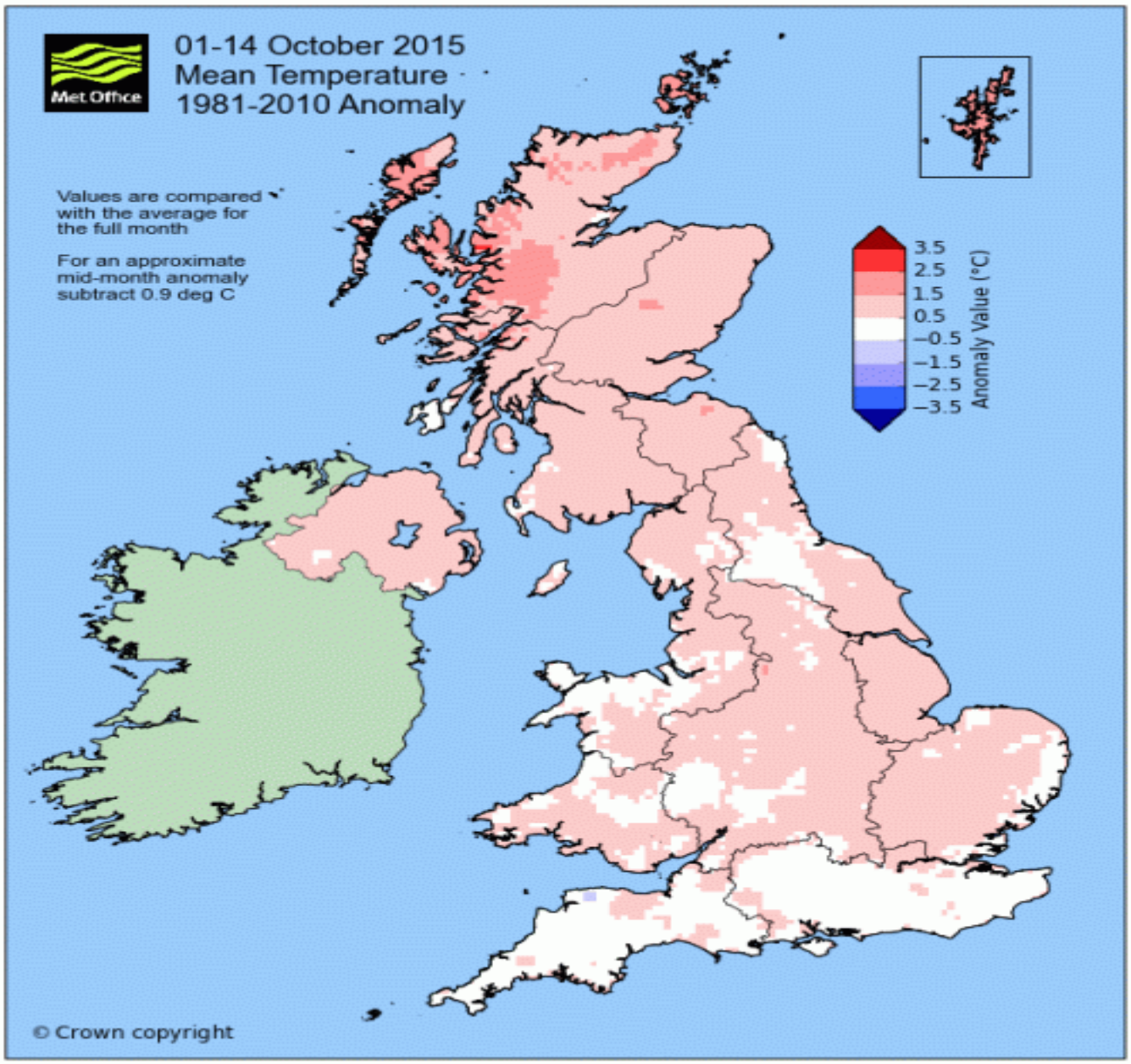
Warm, dry, sunny start to October

Description

The first half of October has been dominated by high pressure, giving a warm, dry, sunny start to October across the UK.

The month started with some weather fronts crossing the UK bringing rain in places. However the mid month statistics* (1 -14th October 2015) show that from the 5th onwards a high pressure system has dominated our weather bringing dry, settled conditions for most of us.

However, because of the position high pressure, we have seen relatively cool air coming in from the north-east. This has resulted in plenty of pleasant, sunny days, particularly in western areas, but with temperatures dropping away at night and a few frosts in places (coldest in this period -3.7 °C at Altnaharra on 13th). Sunshine hours and maximum temperatures so far this month have been above average, but many places have seen night time temperatures below what we would expect, meaning the overall mean temperatures so far are above average for the whole of October.



Rainfall has been well below normal in western areas, although closer to what would be expected by this point in the month in some eastern parts of the UK. As a whole the UK has seen just 20% of the expected monthly rainfall so far, well short of the 50% we would expect to see by mid month.

1-14 Oct 2015	mean temperature		sunshine duration		precipitation	
	degC	degC	hours	%	mm	%
UK	10.3	0.8	57.1	62	25.5	20
England	11	0.6	60.7	59	25.2	27
Wales	10.4	0.5	60.2	65	24.8	15
Scotland	9.1	1.2	49.7	66	28.5	16

N Ireland	10.3	0.9	61.4	70	12.1	10

Of course, while these figures are interesting, they don’t tell us where the month will end up overall. Latest forecasts show that the settled weather is expected to continue for many over the next few days, before conditions become generally more unsettled across the UK with outbreaks of rain and stronger winds, interspersed with drier, brighter periods as we head towards the end of the month.

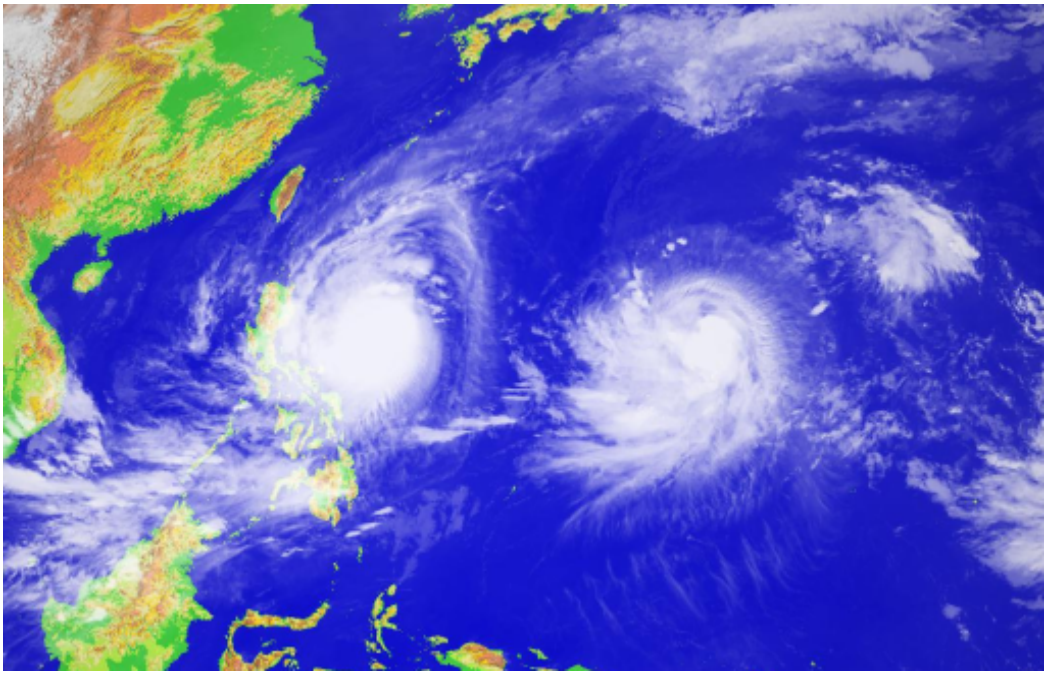
*Data from the Met Office’s UK digitised records dating back to 1910.

Date Created
October 2015

Typhoon Koppu heads to the Philippines

Description

The very active tropical cyclone season in the North Pacific Ocean is continuing with the development of typhoons Koppu and Champi in the last few days. Typhoon Champi has just crossed the Mariana Islands, but is not expected to threaten land further in the near future. However, Typhoon Koppu is bearing down on the island of Luzon in the Philippines.



Typhoons Koppu (left) and Champi (right) at 0900 UTC on 16 October 2015
Image courtesy of the Japanese National Institute for Informatics

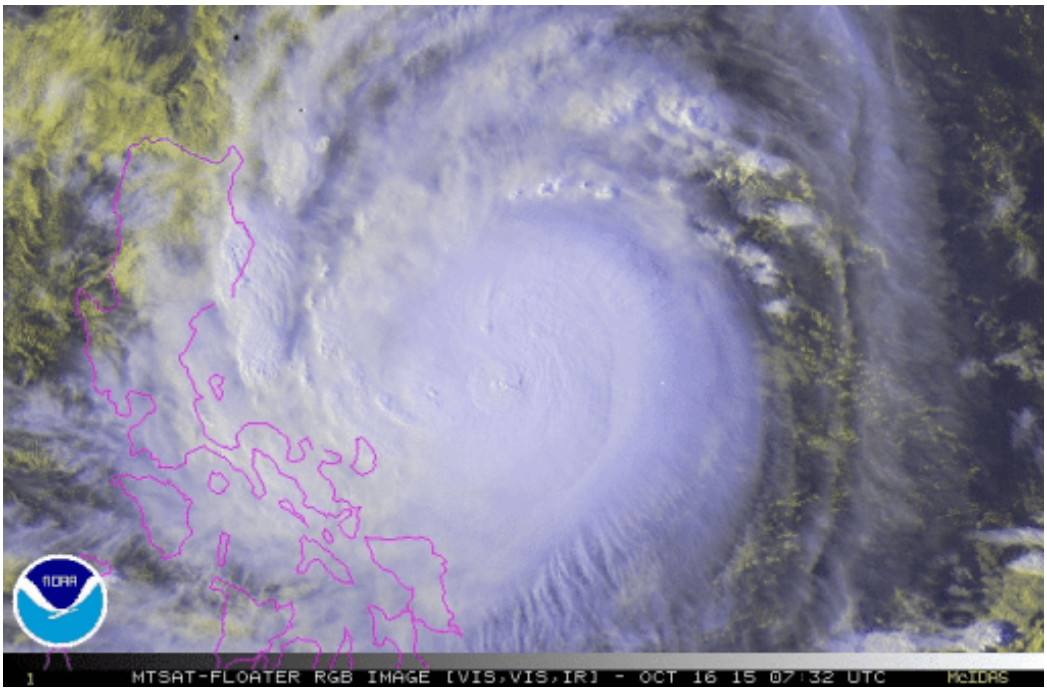
Based on latest forecasts the centre of the typhoon is likely to make landfall late on Saturday night, UK time.

However, with Typhoon Koppu the greater threat could come from heavy rainfall. Forecasts currently suggest that the typhoon will become slow moving over the Philippines and could take anything between two and five days to move away from Luzon.

The wind is expected to be destructive close to the eye as it comes onshore, with sustained winds likely to be 115mph and gusts to 160mph. Whilst the winds should weaken after landfall, rainfall will continue and be particularly heavy on the slopes of the high ground in northern Luzon. It is estimated that as much as a metre of rainfall could occur in this area which is likely to bring flooding and mudslides. A storm surge is expected near the eye of the storm.

Further south the capital Manila, which is located on lower ground on a west facing bay, could receive

over 200mm rain and be subject to coastal flooding due to the strong westerly winds on the southern flank of the typhoon forcing water into the bay.



Typhoon Koppu at 0732 UTC on 16 October 2015
Image courtesy of NOAA

Elsewhere in the Pacific it is possible that two further tropical storms could develop in the coming days in addition to Typhoons Koppu and Champi, although no immediate impact on land areas is expected. Looking a little further ahead, some computer models expect a tropical storm to develop in the Gulf of Mexico later next week, but it is too early to give precise predictions of track and impacts at this stage.

Official warnings for the latest tropical cyclones in the western North Pacific are produced by the Japan Meteorological Agency. The Met Office routinely supplies predictions of cyclone tracks from its global forecast model to regional meteorological centres worldwide, which are used along with guidance from other models in the production of forecasts and guidance. We also provide updates on current tropical storms via @metofficestorms on Twitter.

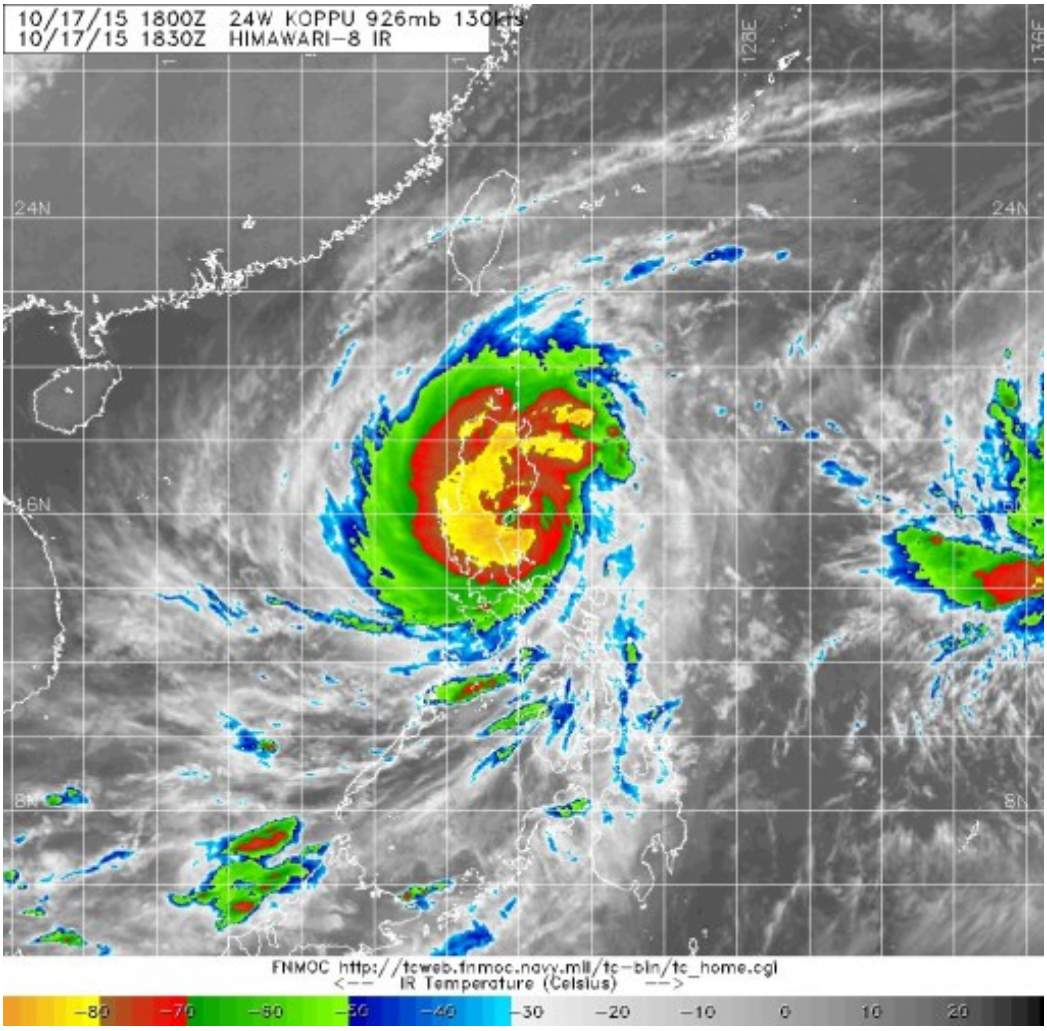
Date Created
October 2015

The impacts of Typhoon Koppu

Description

Typhoon Koppu made landfall in the early hours of Sunday (local time) close to Casiguran in northern Philippines as an intense Typhoon. At landfall it was equivalent to a category 4 Hurricane with sustained winds averaged over a minute estimated to be close to 155 mph with gusts near 185 mph. There were reports of significant storm surge/large waves.

Through Sunday Koppu tracked slowly west across Luzon and was near San Fernando this morning (Monday) where it was downgraded to a Tropical Storm. It is expected to continue slowly across the north of Luzon through Monday and much of Tuesday.



Satellite image courtesy of the Joint Typhoon Warning Center.

Rainfall and flooding are now the main threat with torrential rain forecast in areas over the next 48 hours. 238mm was recorded in the city of Baguio in just 6 hours earlier today. Total rainfall from

Saturday to Tuesday could be as high as 1500mm in places. Several dams are at risk of overflowing and there is a significant landslide risk in the coming days.

There is considerable uncertainty in the track of Koppu as it clears the Philippines later this week. Some models take this system north, perhaps strengthening into a typhoon again and producing a risk of flood impacts in parts of Taiwan. However, it is possible Koppu could move north-east avoiding any impact on Taiwan, but posing a threat to the Ryukyu Islands of Japan.

Date Created
October 2015

Name our storms – we were blown away

Description

Now the best of the rest…

After receiving thousands of suggestions for names, this week we announced the official list of storm names that will be used for autumn/winter 2015-16. The list ranges from Abigail, through Gertrude and Tegan to Wendy, but what about the more creative names that were put forward by the UK and Irish public?

There were plenty of more imaginative ideas sent in which we'd like to share with you and say thanks for getting behind the project and contributing.

Some people suggested themes: leaf shaker, leaf stripper, branch wobbler, trunk trembler, root ripper, armegeddon!

There were lots of votes for using tree and flower names such as: Alder, Blackthorn, Cypress, Ivy, Juniper, Oak, Poplar, Yew.

Greek Gods and Goddesses were also popular along with characters from Shakespeare's plays and other literature: Prospero, Zeus, Apollo, Puck, Beowulf, Hannibal, Macbeth.

Cartoon and film characters also featured in the ideas along with using colours: Zebedee, Bilbo, Baldrick, Smaug, Kraken.

Here's a selection of Tweets we received:

> After my first bath Mr Brown thought we'd been hit by a storm @metoffice so he suggests Paddington #nameourstorms https://t.co/XjLr1WvYoz
>
> — Paddington (@paddingtonbear) September 8, 2015

> Hurricane Tetley if it's a storm in a teacup. Unless it's a Typhoo-n of course. #nameourstorms
>
> — Will Cameron (@willicm) September 8, 2015

> #nameourstorms In A Teacup
>
> — Freya (@speelingmstake) September 8, 2015

> Stormageddon #nameourstorms
>
> — Joe Warplanes (@doitlots) September 9, 2015

Date Created
October 2015

Record breaking Hurricane Patricia expected to make landfall over Mexico

Description

Hurricane Patricia has developed in the eastern Pacific and after a period of rapid intensification has become the most intense hurricane in the eastern Pacific in recorded history. US Air Force aircraft have been flying reconnaissance missions in and around the hurricane and their latest data suggest 1-minute average winds are near 200 mph and the central pressure is 880 mb. This beats previous records in the east Pacific set by Hurricane Linda in 1997 and also beats the Atlantic record set by Hurricane Wilma in 2005. Only in the western Pacific have there been a handful of tropical cyclones with a lower central pressure, and Patricia is even more intense than notorious tropical cyclones such as Typhoon Haiyan which struck the Philippines in 2013. The lowest pressure for a tropical cyclone globally was 870 mb set by Typhoon Tip in 1979.

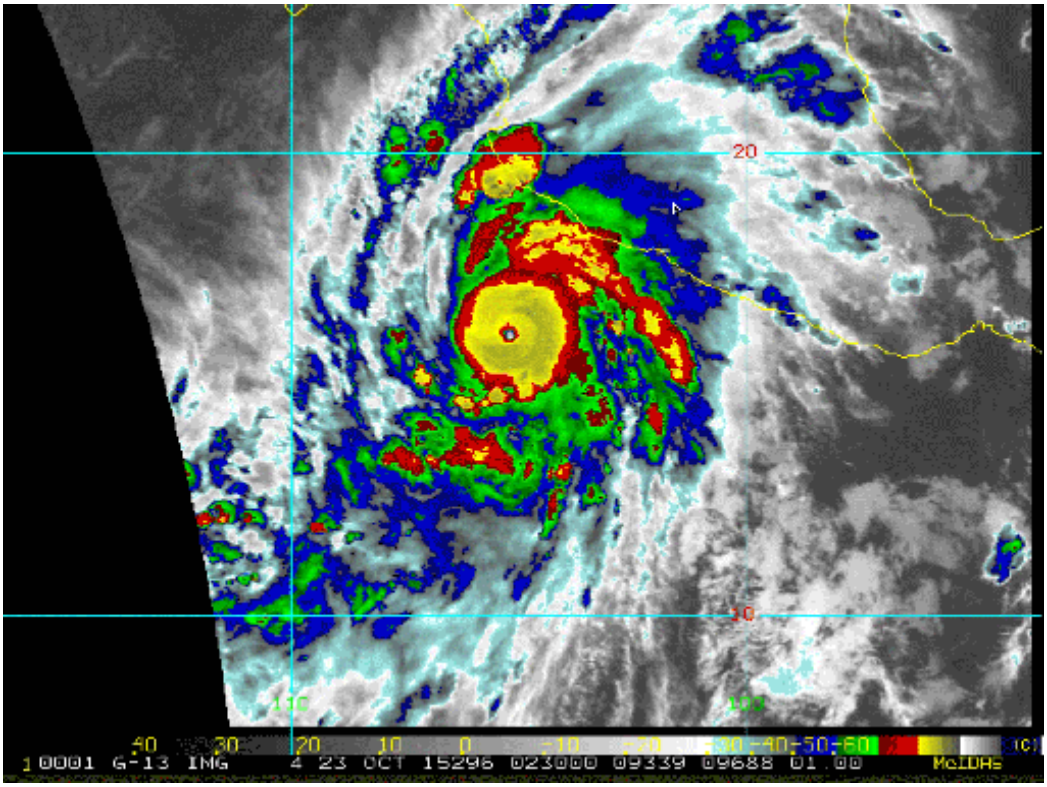


Image courtesy of NOAA

Many intense tropical cyclones peak in intensity over oceans and either dissipate without making landfall or strike land at a much lower intensity. However, Hurricane Patricia is expected to make landfall over the Pacific coast of Mexico within little more than 12 hours. Thus, if any weakening occurs before landfall it will be fairly minimal.

Records dating back to 1949 indicate that no category 5 hurricane has ever struck the Pacific coast of

Mexico, so potentially another record could soon be set. Based on latest National Hurricane Center forecasts landfall is likely just to the west of Manzanillo this evening local time (early hours of Saturday UK time). Whilst the strongest winds are likely to be experienced close to the coast, Patricia is expected to bring heavy rain well inland over the next day or two with several hundred millimetres possible.

Latest official forecast track for Hurricane Patricia from the National Hurricane Center

The exceptionally active tropical cyclone season seen across the North Pacific Ocean is primarily as a result of the strong El Niño which has existed for the last few months. This has raised sea surface temperatures well above normal in this region and also made atmospheric conditions conducive to development of frequent and strong tropical cyclones. Here are some of the recent statistics on tropical cyclone activity in 2015, bearing in mind that any records relate to the era of reliable satellite data coverage from the 1960s and 1970s onwards.

- 15 hurricanes in the east Pacific east of the Dateline – tied with previous record
- Nine hurricanes in the east Pacific east of the Dateline have reached category 4 or 5 – more than any previous year
- 22 hurricanes or typhoons across the northern hemisphere have reached category 4 or 5 – four more than the previous record
- Three major (category 3 or above) tropical cyclones have been active simultaneously in the North Pacific four times on record – two of those occasions have been in 2015.
- Tropical cyclone activity in the central Pacific region (140-180°W longitude) has been about six times its normal level.

Official warnings for the latest tropical cyclones in the East Pacific are produced by the US National Hurricane Center. The Met Office routinely supplies predictions of cyclone tracks from its global forecast model to regional meteorological centres worldwide, which are used along with guidance from other models in the production of forecasts and guidance. We also provide updates on current tropical storms via @metofficestorms on Twitter.

Statistics on recent northern hemisphere tropical cyclone activity are courtesy of Dr. Phil Klotzbach of Colorado State University (@philklotzbach).

Date Created
October 2015

The latest on Hurricane Patricia

Description

Hurricane Patricia made landfall at 6.15pm local time on 23rd October as a category 5 hurricane near Cuixmala, Jalisco, on the pacific coast of Mexico. This is a relatively low populated area, 55 miles from the nearest significant city Manzanillo. Maximum sustained wind speeds at landfall were estimated by satellite to be 165mph with gusts of 200mph. 100mm of rain has fallen widely in just 24 hours, with up to 500mm in isolated spots and an estimated 5m to 7m storm surge affected coastal areas. Consequently there has been a significant risk of coastal and flash flooding, with mud and landslides.

Patricia is forecast to rapidly weaken as it moves over the mountains of Mexico today and to dissipate as it tracks north east, though further significant rainfall and winds, along with flooding, is expected along the route in the next 12 hours.

Currently Patricia is expected to decrease, becoming a tropical storm, over central northern Mexico with wind speeds of 60 mph and gusts 85 mph later today.

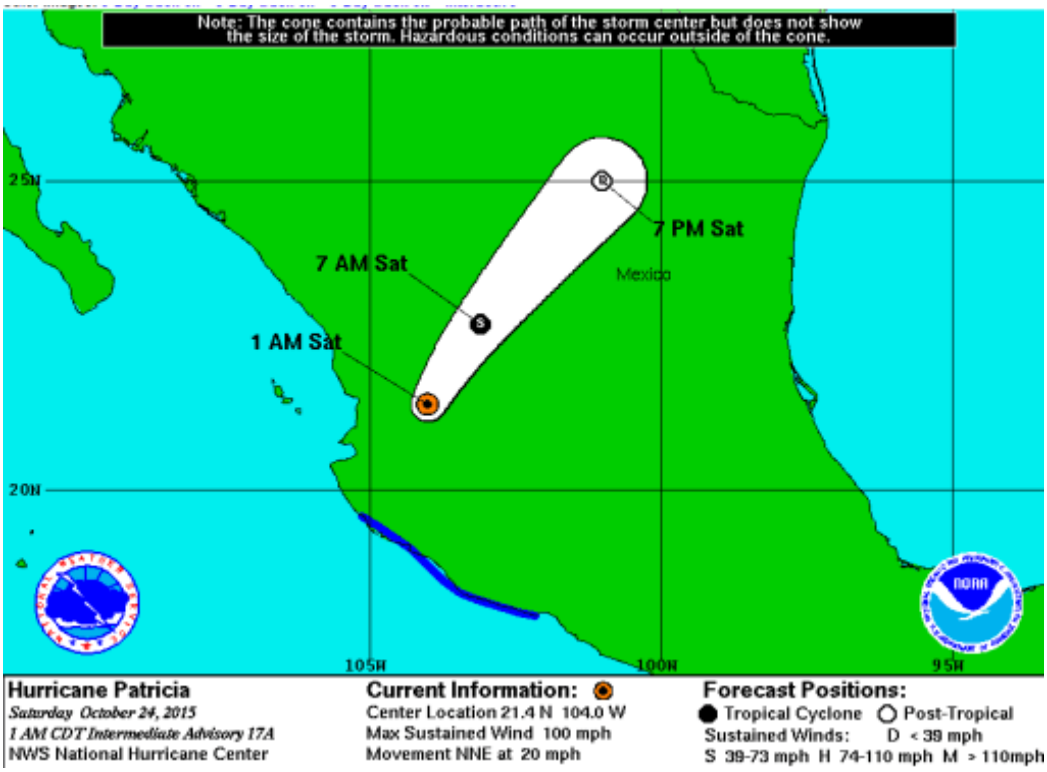


Image courtesy of National Hurricane Centre

Prior to landfall aircraft flew through the storm and recorded maximum sustained winds of 200mph and barometric pressure of 879Hpa, thus becoming the strongest tropical cyclone on record in the western

hemisphere and the first to be recorded at over 200mph.

This will have to be verified by the World Meteorological Organisation before being considered official.

Hurricane Patricia is currently around 85 miles north-northwest of Manzanillo and is traveling at around 20 mph. Patricia has begun to decay and has sustained winds of approximately 130 mph and gust of of 160 mph, making it a category 3 storm with still potentially destructive winds.

A total of 50,000 people are estimated to have been evacuated so far ahead of Hurricane Patricia in three Mexican states. The Met Office has been, and will continue to, provide regular up dates to the FCO to best advise UK citizens in the affected area.

As it it moves across the country moisture and energy from Hurricane Patricia is expected to enhance a weather system across Texas this weekend and early next week boosting its potential rainfall (200 to 450mm over Sat/Sun) and flood threat. This could potentially affect this weekends F1 Grand Prix in Austin, Texas.

Official warnings for the latest tropical cyclones in the East Pacific are produced by the US National Hurricane Center. The Met Office routinely supplies predictions of cyclone tracks from its global forecast model to regional meteorological centres worldwide, which are used along with guidance from other models in the production of forecasts and guidance. We also provide updates on current tropical storms via @metofficestorms on Twitter.

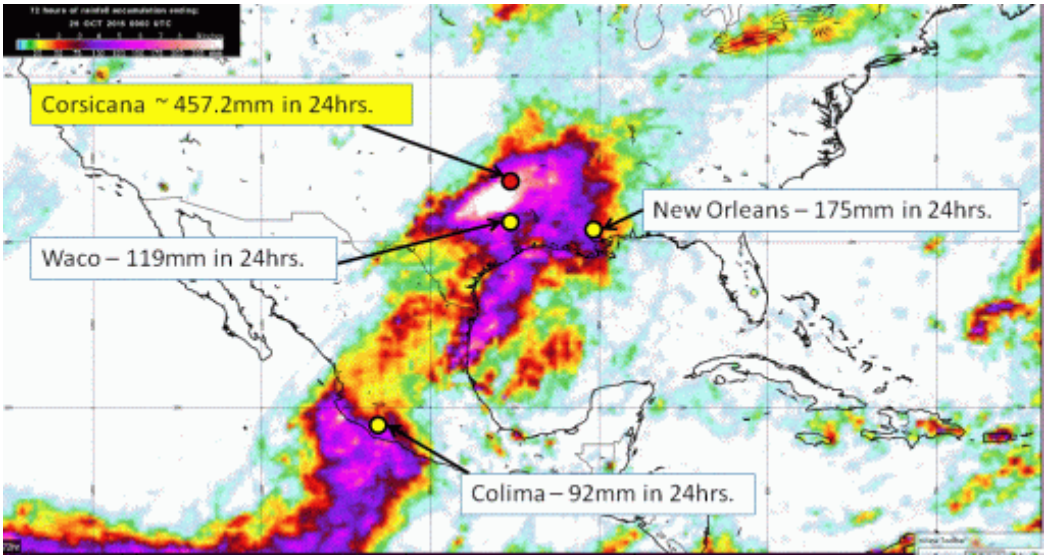
Date Created
October 2015

World weather this week

Description

Southern USA

After making landfall on Saturday 23 October as a category 5 hurricane, Hurricane Patricia weakened rapidly as it moved over the mountains of Mexico. Hurricane Patricia became the deepest hurricane on record with minimum central pressure of 879hPa, beating the previous record of 882hPa set by Hurricane Wilma in the Atlantic in 2005. The remnants of Patricia formed an area of low pressure over the Gulf of Mexico over the weekend and brought intense rainfall to the southern states of the USA. Severe flood impacts were reported in parts of Texas and Louisiana with up to 500mm of rain reported. New Orleans reported 220mm in the last 24 hours with an unconfirmed total of 457mm in 24 hours at Corsicana, Texas. This torrential rain also led to delays at the USA Grand Prix. The eastern fringes of Texas, along with Louisiana, Mississippi, Alabama and Arkansas are at risk of receiving another 100-200mm of rainfall today (Monday) bringing further flooding impacts. Looking ahead, further heavy rainfall will affect areas of the Pacific coast of Mexico that were impacted by Patricia; Texas and Louisiana from Friday with another 200mm or more of rain. This will exacerbate the current flooding in these regions.



Map showing rainfall totals across Mexico and the southern states of the USA

Eastern Mediterranean

A spell of very unsettled weather is affecting the eastern Mediterranean bringing heavy rainfall, localised flooding to the Levant coasts along with reports of baseball-sized hail in parts of Egypt. This weather will continue to move eastwards across countries such as Syria, Israel, Lebanon and into Iraq and Iran over the coming days with daily rainfall likely to approach 100mm. This will lead to a risk of flash flooding and may be accompanied by further damaging hail.

Sri Lanka and SE India

Heavy rain associated with the northeasterly monsoon has brought some high rainfall totals across Sri Lanka with 89mm recently recorded in 3 hours. There is a risk of a tropical depression forming in the southern Bay of Bengal this week which would bring further very heavy rainfall across Sri Lanka and SE India. Some places may see up to 200mm a day, with an event total of up to 600mm. This will lead to significant flood and landslide risk across this region, with the large Indian city of Chennai and Sri Lanka capital Colombo at risk.

Eastern Canada/NE USA and eastern Europe

Over next weekend and early next week, a cold plunge of air is likely to dip southwards across the eastern provinces of Canada and far northeastern states of the USA such as Maine, New Hampshire, Vermont and Massachussetts. Daytime temperatures may only just rise above freezing in what will be a fairly early cold snap for the regions.

Cold air will also sink southwards from the arctic to bring an early taste of winter to eastern Europe affecting Ukraine, Belarus, Poland and also western Russia.

Date Created
October 2015

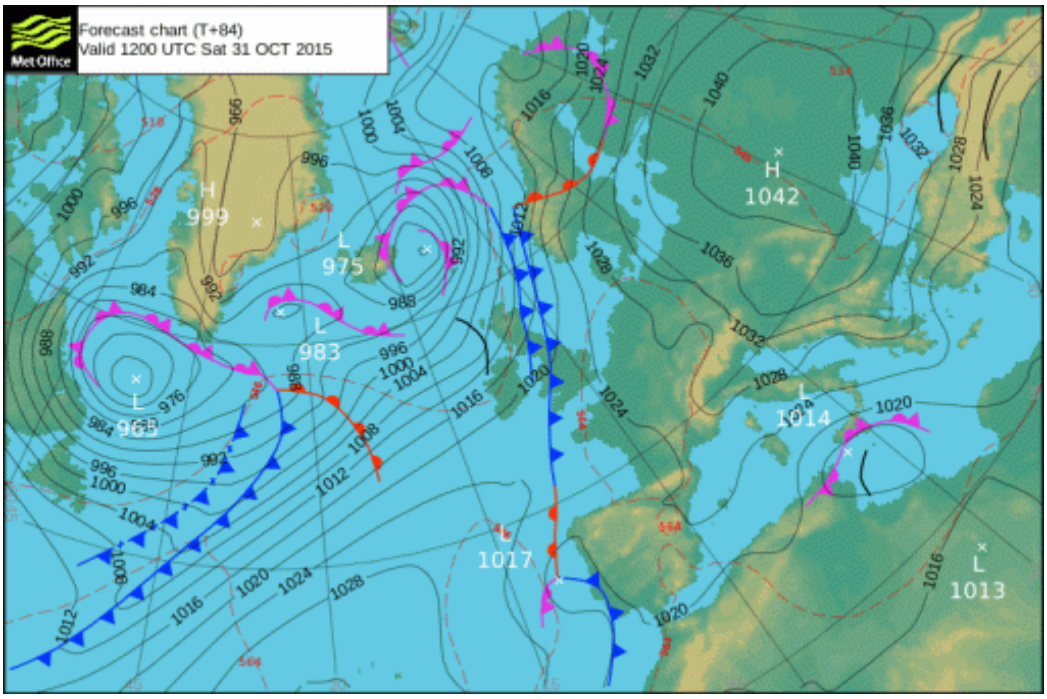
Spooky heat for Halloween weekend?

Description

Last Halloween saw record breaking temperatures across parts of the United Kingdom, with both Kew Garden's, London and Gravesend, Kent reaching a maximum temperature of 23.6C.

What can trick or treaters expect this year on Halloween?

The weather's currently in an unsettled mood, with a mild south or southwesterly flow dominating the weather pattern. Most areas will escape night frosts for the rest of the week, and yesterday (Tuesday) parts of London reached almost 20 degrees during the afternoon. Although the next couple of days are likely to bring rain to all areas, the worst of the unsettled weather should stay in northern and western parts of the UK as we head into the last day of October.



Pressure chart for midday on Saturday 31 October 2015

Pressure will rise across the south allowing more settled conditions to take hold towards the south and east. The generally mild theme looks likely to continue with warm air spreading northwards from the continent. As a result there is a possibility that parts of southeast England could see maximum temperatures in the high teens, perhaps touching 20 Celsius. The extent and degree of warmth will be affected by how much cloud cover there is which is difficult to forecst accurately 3 days ahead, however therer will be some decent bright or sunny spells. You can keep up to date with the most recent forecast on our 5 day forecast pages.

Sunday sees the start of a new month and it's looking likely that we will see similar weather to Saturday with many places staying dry with bright or sunny spells after early mist or fog clears. The

warm air may hang on across the south where, if sunshine allows, it could turn very warm with temperatures getting close to the UK temperature record for November of 21.7C (reached at Prestatyn, North Wales on 4 November 1946). Record breaking or not, this weekend provides plenty of opportunities to get out and shake off those cobwebs.

Date Created
October 2015

What are the prospects for the weather in the coming winter?

Description

Anyone who has read the newspapers lately can't have failed to notice this winter's weather is in the headlines. Justification for claims of a 'big freeze' has come from sources as diverse as the plucky Bewick Swan settling into the comfort of the WWT reserve at Slimbridge, Gloucestershire earlier than ever before, to the strong El Niño and cool North Atlantic Ocean.

But what can we genuinely say about prospects for the coming winter, and what is the influence from phenomena like El Niño? Jeff Knight, from the Met Office Monthly to Decadal Prediction team explains.

In the Met Office we produce outlooks for the UK weather as a whole over three monthly periods. These outlooks are not forecasts in the conventional sense, although they are still made using computer prediction models. While a forecast might say 'it will rain tomorrow', the chaotic nature of the atmosphere beyond a few days ahead leads to growing forecast uncertainty, making it meaningless to try to make the same kind of forecast for a day in three months' time.

Fortunately, atmospheric chaos is only part of the story and, when we consider the broad characteristics of the weather over a three month period, we can see influences from a range of global climate factors that we can endeavor to predict. While the unpredictable part means there is always a range of possible outcomes, the part we can try to predict allows us the opportunity to identify which types of weather are more likely than others. As a result, our outlooks are more useful for professionals who need to assess risk, such as contingency planners, than the public generally. Our current outlook covers the period from November to January.

So what are the global drivers that might influence our weather this winter?

El Niño is the biggest news story currently in global climate. This episodic warming of the waters of the equatorial Pacific Ocean occurs every few years – the last event happened in 2009-10. This ocean warming covers an area about 1,000 km wide and 13,000 km long, stretching along the equator from the South American coast to the West Pacific. El Niño events release a vast quantity of oceanic heat into the atmosphere so it is not surprising that El Niño has effects on weather across the globe.

This year's El Niño started to grow in April and it has now become a strong, mature event similar to the landmark 1997-8 event. Typically, growth will peak around the end of the year and decline during the first half of the following year. We have already seen its effect on global weather systems: this summer's Indian monsoon rainfall fell to drought levels and very hot, dry conditions in Indonesia have contributed to widespread forest fires.

Currently, the outlook for El Niño is for further growth over the next two months. Events are often ranked in terms of sea surface temperatures in Central Pacific, and by this measure, this year's El Niño is more likely than not to become the strongest on record. Temperatures further east near to South America are likely to be not quite as exceptional as in 1997-8. No two El Niños are identical and even very similar events have slightly different characteristics.

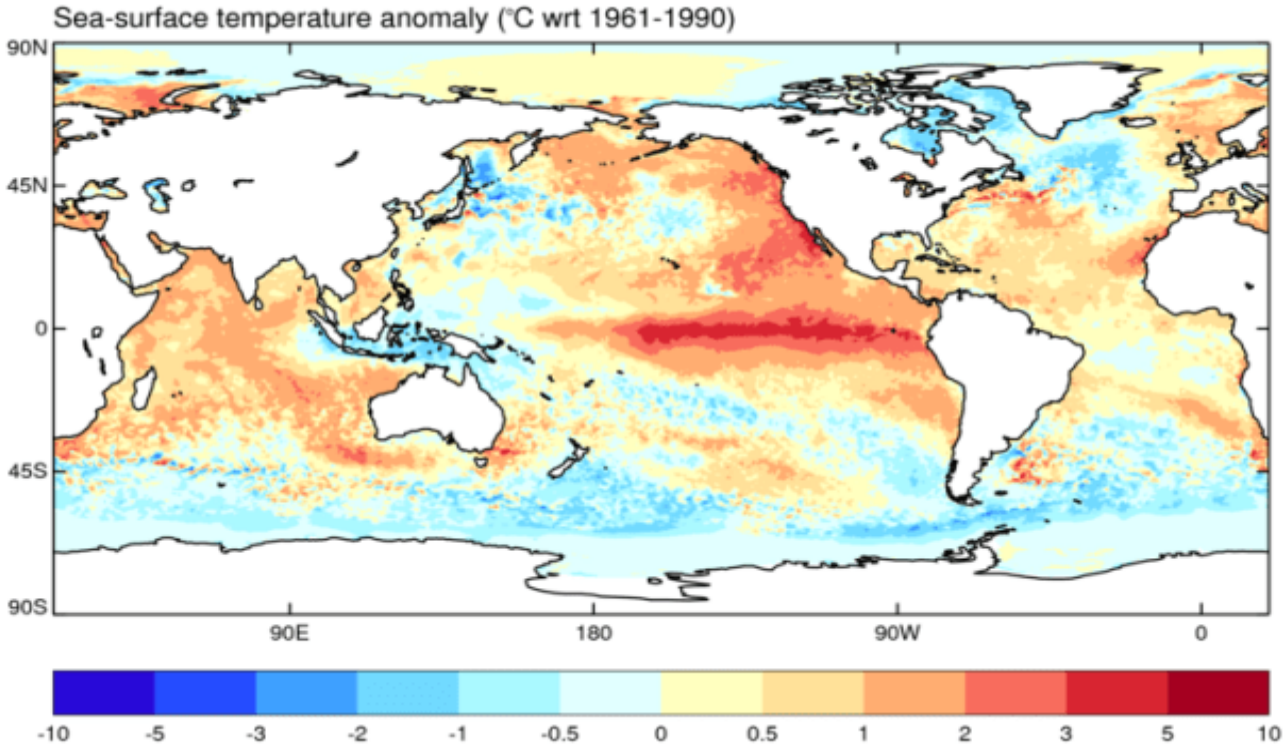
What does El Niño imply for the UK this winter?

Unlike some parts of the world, the effect of El Niño on Europe is relatively subtle. In El Niño years there is a tendency for early winter to be warmer and wetter than usual and late winter to be colder and drier. Despite this, it is just one of the factors that influence our winters, so other influences can overwhelm this signal – it is relatively straightforward, for example, to find years where these general trends were not followed.

What about the Atlantic Ocean?

Closer to home, sea surface temperatures to the west of the UK have been notably lower-than-average in recent months. While it is true the westerly winds that we typically get in winter would have to pass over this region, it is unlikely that this will directly have a strong bearing on expected temperatures. This is because temperatures at this time of year are strongly affected by the direction of the wind. Eastern Europe and Scandinavia are 10-20°C colder than the Atlantic Ocean in winter, so our weather will depend much more on how often winds blow in from the north and east than whether the Atlantic is 1-2°C cooler than usual.

More broadly within the North Atlantic Ocean, sub-tropical temperatures to the south of this cool region are widely above average. This combination results in an increased north-south temperature gradient, which is expected to provide greater impetus for Atlantic depressions. For the UK, this would favour relatively mild, unsettled weather conditions.



Global sea surface temperature anomaly 28 October 2015

Our weather is also affected by changes in the stratosphere

European winters are also sensitive to what is happening in the stratosphere, the layer of the atmosphere between 10 and 50 km up that lies above the weather. The equatorial stratosphere is home to the Quasi-Biennial Oscillation (QBO), a cycle that sees winds switch from easterly to westerly and back roughly every 27 months. First noted by Met Office scientists over 40 years ago, the link with European winter weather has stood the test of time. This year, the QBO is in a westerly phase, which implies an increased chance of a mild and wet winter at the surface.

A considerable part of the year-to-year differences between UK winters is related to the occurrence of sudden stratospheric warmings (SSWs). In these events, the polar stratospheric vortex – the fast moving circulation of stratospheric air that whirls around the North Pole in winter – abruptly breaks down. They occur one winter in two on average, and events are most common in January or February. In the majority of cases SSWs lead to the establishment of cold easterly flow at the surface across Europe and the UK. The last SSW was in January 2013, and this event contributed to the cold late winter and early spring in that year.

Whether we get an SSW or not depends on a number of influences, such as El Niño and the QBO. Currently our models suggest an increased likelihood of an SSW from January onwards. If this were to happen, its effects would not be felt much before the end of our November to January outlook period. At the moment, therefore, this is still a long way off, and we consider this suggestion to be tentative.

So what can we expect in the UK this winter?

Most of the global drivers discussed above tend to increase the chances of westerly weather patterns

during our November to January outlook period. Our numerical prediction model, being sensitive to these drivers, also predicts a higher-than-normal chance of westerly conditions. This results in an outlook for an increased chance of milder- and wetter-than-usual conditions, and a decreased chance of colder and drier conditions, for the UK. Our outlook also indicates an increase in the risk of windy or even stormy weather.

It should be noted that these shifts in probability do not rule out the less favoured types of weather completely. Also, a general tendency for one type of weather over the three months as a whole does not preclude shorter spells of other types of weather.

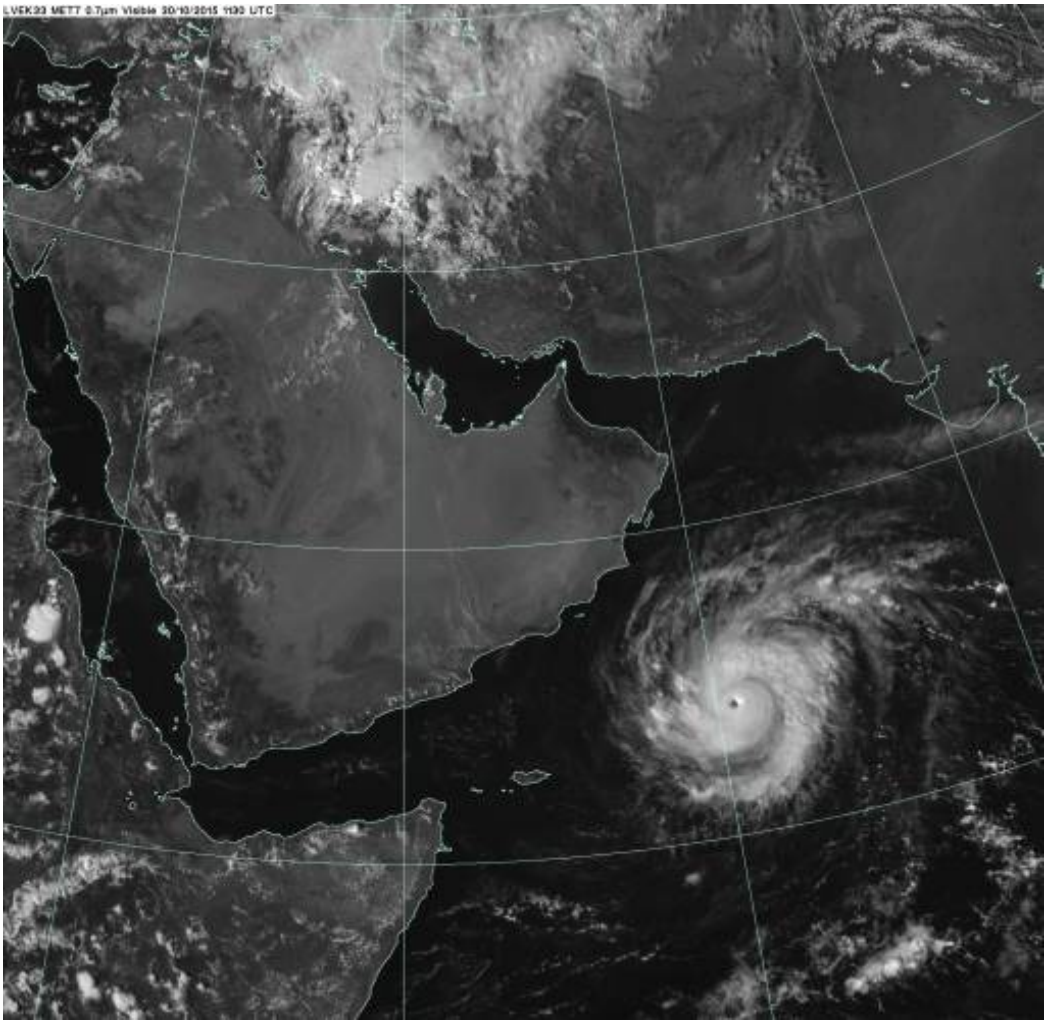
Finally, there are hints that the outlook might be rather different in the late winter, with an increased risk of cold weather developing. Nevertheless, it is currently too early to be confident about this signal.

Date Created
October 2015

Cyclone Chapala approaching the Arabian Peninsula

Description

Cyclone Chapala, currently over the Arabian Sea is expected to strengthen to the strongest category of Super Cyclonic Storm this weekend which means that sustained winds will be in excess of 140 mph, with gusts likely to be in excess of 170 mph. This is equivalent to a Category 4 storm on the Saffir-Simpson Hurricane Wind Scale.


Meteosat visible satellite image showing Cyclone Chapala in the Arabian Sea at 1130 GMT on 30 November 2015.

Chapala is rated as an Extremely Severe Cyclonic Storm by the Indian Meteorological Department who are the official tropical cyclone forecasting centre for the Arabian Sea.

This Super Cyclone is expected to slowly track west or northwest this weekend, just west of the Gulf of Aden, producing Hurricane Force winds and waves of up to 15 metres. These conditions are likely to impact on the very busy shipping route from the Indian Ocean through the Gulf of Aden, making it very

difficult for marine transport to move through this area for several days.

Chapala is expected to make landfall in southeast Yemen, or perhaps the far southwest of Oman, later on Monday or through Tuesday. However, there remains some uncertainty over the time and exact location of landfall. This Cyclone is likely to have weakened a little by then due to the interaction with land, but could still be an Extremely Severe Cyclonic Storm with sustained winds of 115 mph and gusts to 150 mph. These winds could cause destruction along the coastline if they occur across a town or city, but this is a sparsely populated coastline.

Rainfall is also likely to prove hazardous, with this system possibly producing up to 500mm of rainfall in a 48 hour period. This is likely to cause severe flooding if it falls over a town or city. This part of Yemen usually sees less than 100mm of rain during the whole year.

Official warnings for the latest tropical cyclones in the north Indian Ocean are produced by the Indian Meteorological Department. The Met Office routinely supplies predictions of cyclone tracks from its global forecast model to regional meteorological centres worldwide, which are used along with guidance from other models in the production of forecasts and guidance. We also provide updates on current tropical storms via @metofficestorms on Twitter.

Date Created
October 2015

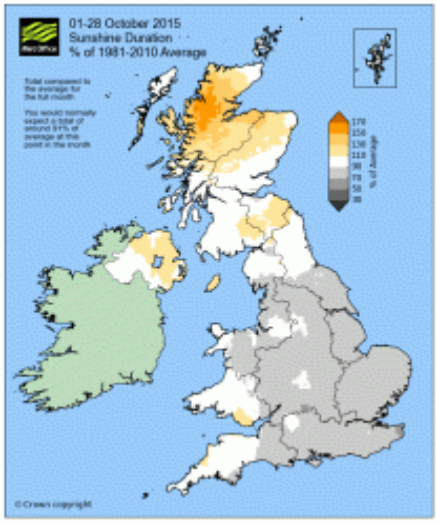
Warm, sunny and dry October

Description

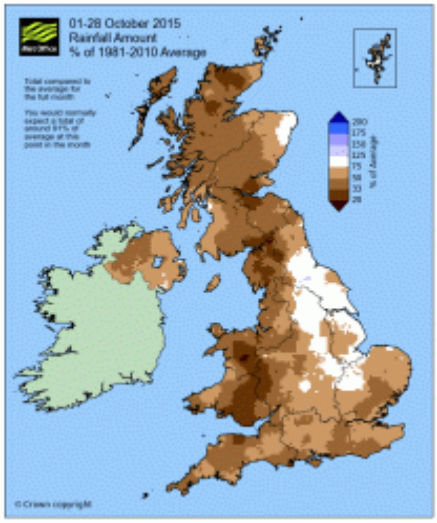
Early provisional figures (1-28 October) show sunshine and temperatures were above normal in almost all places this month while rainfall has been below average, especially in western areas.

Much of October has been relatively settled, with high pressure dominating our weather. This has led to many dry, sunny days but cold nights and even a few frosts (coldest so far -5.0 °C at Braemar on 17th). Although the end of the month so far has been more unsettled, it has remained milder than average.

Rainfall has been below average, especially in the west of the UK, with only around 30% of average in eastern parts of Wales. The exception to this has been a band from Cambridgeshire to North Yorkshire and around Aberdeen where rainfall has been around average (at the time these figures were compiled we would expect around 90% of the month's total rainfall and sunshine to have happened).



1-28 October 2015 sunshine



1-28 October 2015 rainfall

Maximum temperatures (daytime) have been above normal in almost all areas for October, with north west Scotland being 2°C above, while south-east England stayed around average. However cooler nights have led to Mean temperatures (average of daytime and night-time temperatures) over most of England and Wales being near average, but a degree or so above in parts of Scotland and Northern Ireland.

EARLY	**mean temperature**		**sunshine duration**		**precipitation**	
1-28 Oct 2015	**Act**	**Anom**	**Act**	**Anom**	**Act**	**Anom**
	degC	**degC**	**hours**	**%**	**mm**	**%**

Regions						
UK	9.9	0.4	88.5	96	61.6	48
England	10.6	0.2	89.5	87	50.5	55
Wales	10.0	0.1	89.0	96	64.3	38
Scotland	8.6	0.7	85.4	113	78.4	45
N Ireland	9.8	0.4	94.7	108	64.8	54

Meanwhile Halloween starts off cloudy or foggy for many with some patchy rain across northern parts. However this clears leaving a mild day with patchy sunshine for many in the afternoon. Sunday, 1st November, looks much the same staying mostly dry with some sunny spells. Check out our five day forecast for more details.

Please note that these provisional figures, especially for rainfall & sunshine, are subject to revision. Anomalies are expressed relative to the 1981-2010 averaging period.

Date Created
October 2015